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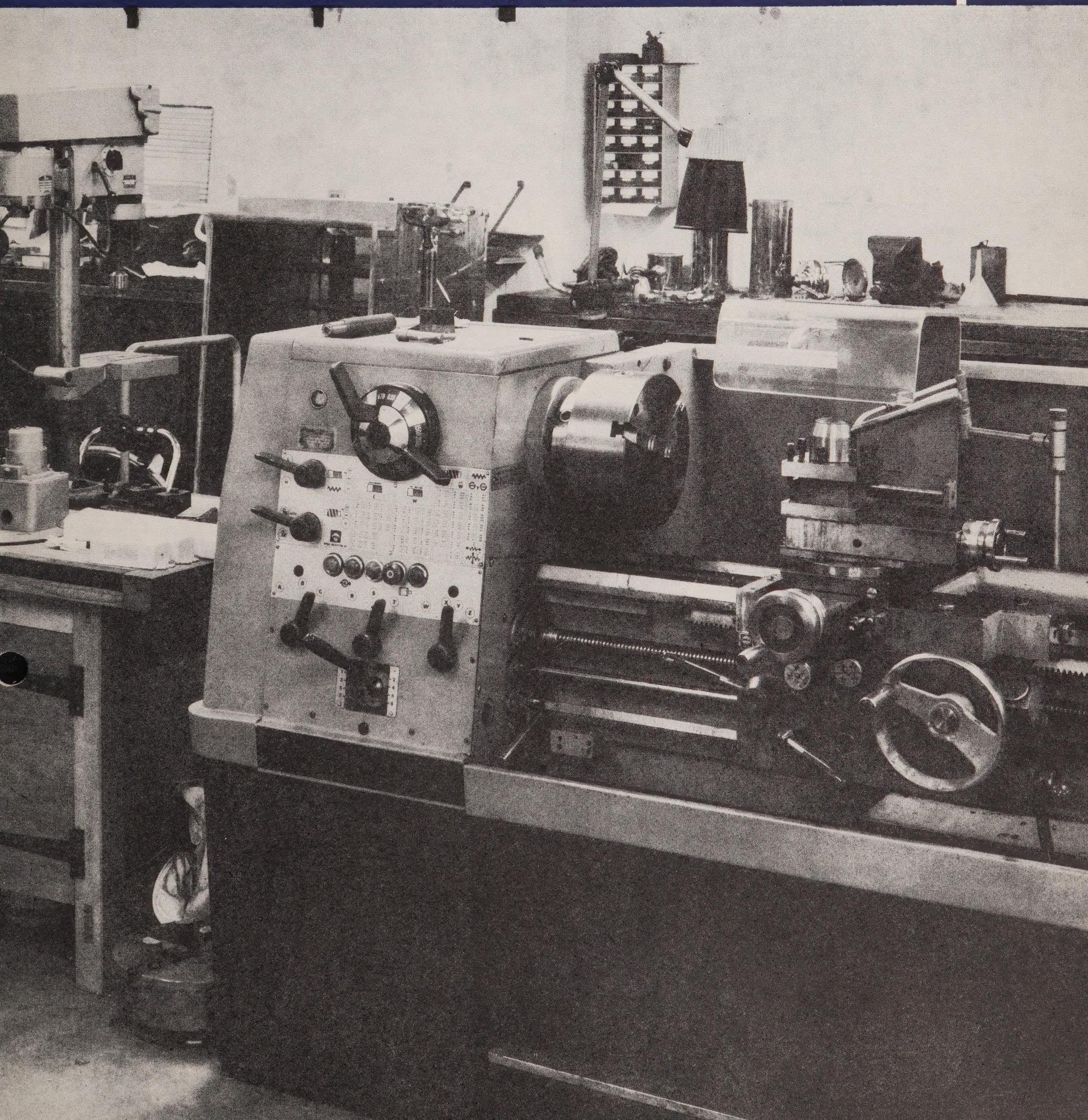
HOSPITAL BUILDING NOTE

WORKS DEPARTMENT FOR DISTRICT GENERAL HOSPITALS AND TEACHING HOSPITALS

34



Department of Health and Social Security: London

Welsh Office: Cardiff

Hospital Building Note Number 34

Works Department for District General Hospitals and Teaching Hospitals

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I. Scope

1. This Building Note gives guidance on the design of works departments for carrying out building and engineering maintenance in District General and Teaching Hospitals and separate large industrial complexes serving an area comprising several groups of hospitals. Six sizes of department are dealt with:

(a) to serve a group containing 300 to 600 beds
(b) „ „ „ „ up to 800 „
(c) „ „ „ „ „ „ 1200 „
(d) „ „ „ „ „ „ 2000 „
(e) „ „ „ „ „ „ 3000 „
(f) „ „ „ „ „ „ 4000 „

II. General considerations

2. There are several factors which influence the size of a works department, some of the more important are detailed below.

(a) The extent of engineering contract maintenance carried out. Usually, as a minimum, contract maintenance is necessary for lifts and some specialist equipment.

(b) Implementation of the planned preventive maintenance system described in Hospital Technical Memorandum No. 13: Planned Preventive Maintenance—A System for Engineering Plant and Services.

(c) The extent of building contract maintenance. Usually, as a minimum, contract maintenance is used to overcome the "peaks" of the annual workload. The position can vary between the extremes of

(i) 90% contract work, with emergency repairs only performed by a small direct labour force.

(ii) 90% direct labour force with "peak" or specialist work only being performed by contract.

(d) The extent to which the maintenance staff perform agency or minor capital works.

3. In order to produce guidance for a suitable plan for works departments generally, certain assumptions must be made regarding the factors listed in the previous paragraph. These assumptions are:

(a) Minimum contract engineering maintenance.

(b) Full implementation of engineering planned preventive maintenance.

(c) 50% contract/50% directly employed labour for building maintenance and

(d) Minimal agency or minor capital works.

4. Hospital Technical Memoranda Nos. 12: Maintenance of Buildings, Plant and Equipment and No. 13: Planned Preventive Maintenance: A System for Engineering Plant and Services both contain extant guidance on the principles of planning and financial control for maintenance but these are in the process of being superseded by "Estmancode": Estate Management Practices Code for the National Health Service.

5. Maintenance may be carried out by directly employed labour (comprising building, engineering and allied trades) or on a contract basis. The size of the directly employed labour force will depend, *inter alia*, upon the amount of maintenance work, including minor capital works, which local management decide to put out to contract. Since the emphasis of this department is on "Planned Maintenance" it follows that where practical and economic, all vehicle maintenance and general engineering building repairs other than the "base load" should be carried out by outside contract (e.g. term contract).

6. A works department should preferably be located at the major source of work and it is an additional advantage if this is also the location of the headquarters of the hospital group.

7. Where a works department is specifically intended to serve a hospital group it will still be necessary to make some provision within individual peripheral hospitals for carrying out emergency or minor repairs.

8. A works department should be located within the service area of the hospital and integrated with other departments making use of the same service road and parking space. The diagram shows the typical relationship of units within a works department.

9. The works department does not include those engineering, electrical and electronics workshops which service diagnostic X-ray and radiotherapy equipment (see Hospital Building Note No. 6, Diagnostic X-ray Department; any new Hospital Building Note or other official guidance document on the radiotherapy department will cover workshop provision).

10. A simple framed space is needed for the works department so it can be modified to suit changing needs. Exceptionally, where it is a separate building it should be of a light fire-resisting construction. North-light roofs are quite suitable. Work areas should have a clear height of 3.3m; offices, stores, and similar rooms need not exceed 2.4m. Work areas as well as offices require natural lighting and ventilation, supplemented by mechanical ventilation where required for particular appliances or fittings.

11. Office accommodation for the Group Engineer, Hospital Engineer and Building Supervisor, and for their assistants and for clerical staff concerned with "planned" and "preventive" maintenance, should normally be sited in the group and hospital administrative department (see Hospital Building Note No. 18), but provision must be made for supervision of the staff in the works department. Similar arrangements are also appropriate for teaching hospitals.

12. The department should be designed to comply with the requirements of those statutory provisions which apply to the occupation of this type of building.

13. As the works department is classified as a high fire-risk area particular attention should be paid to the recommendations for fire protection contained in Hospital Design Note No. 2—Protection Against Fire, and also to the requirements for the provision of means of escape in case of fire for those persons working in the department. Full consultation should take place with the Chief Fire Officer for the area at an early planning stage in order to decide the extent of fire protection work required. Provision should be made for the display of extracts of statutory regulations etc., and notices on first aid, treatment for electric shock, etc.

14. Some indication of the fittings and equipment which may be required in the work areas and stores is included in this Note. More details will be given in an Equipment Note which will follow the issue of this Building Note.

15. Section IV of this Note describes the different work areas and stores. The Appendix gives recommended gross areas. The sub-division of the areas will depend on local arrangements and should be carried out by using building components which can be altered to accommodate changes in use. Where such items as pipes, scantlings of timber and ladders are stored, certain minimum lengths of storeroom are recommended. These are given in the Appendix to this Building Note.

16. For ease of delivery stores should be grouped in one area which should also have easy access to workshops. This Note assumes that all engineering and building stores are kept within the works area. Those stores containing flammable materials such as paint, timber, paraffin and oil may require special fire precautions and those should be considered in consultation with the Chief Fire Officer for the area. Provided that the requirements set out in paragraphs 12 and 13 are observed the department should be designed with little or no circulation.

III. List of rooms

17. A schedule of recommended areas for the works department based on the information given in parts III and IV of this Note is contained in Appendix A.

A. Basic accommodation

Items (a) to (d) will be needed in all instances.

(a) *Work areas for the following trades*

- (i) Fitters/plumbers
- (ii) Electricians
- (iii) Carpenters/joiners
- (iv) Painters
- (v) Building foreman's enclosure.

(b) *Internal stores*

- (i) Stores area
- (ii) Storekeeper

(c) *Electrical switchroom*

(d) *Staff lavatories and cloakroom*

(e) *Cleaners' room*

(f) *External stores*

- (i) Builders' compound (including storage for scrap engineering materials and receptacle for broken lamps, fluorescent tubes and other glassware)
- (ii) Garden equipment store.

(g) *Garage accommodation*

B. Supplementary accommodation

(a) *Where the group works department is on the same site as the hospital*
Lock-up store.

(b) *Where the group works department is not on the same site as the hospital*
Combined lock-up store/workshop.

Functional unit

18. The functional unit selected for the basic items in this Note, is the department.

C. Additional accommodation

19. The following accommodation additional to the basic may be required:

(a) *Store for flammable items*

(b) *Paint spray booth*

(c) *Store for articles awaiting repair or disposal*

(d) *Corrosive solutions store*

(e) *Battery charging stations and accommodation*

(f) *Garages*

(g) *Covered space for bicycles*

(h) *Messroom.*

IV. Description of rooms

A. Basic accommodation

20. This section shows the various trades which will use the work areas. The Appendix gives recommended areas.

(a) Work areas

(i) *Fitters/plumbers*

21. This area is required for carrying out repairs to engineering and plumbing services and equipment. Work-benches complete with vices will be required; lockable drawers and above-bench shelving will also be required. One or two Belfast or stainless-steel sinks and a number of lockable cupboards are needed.

22. Typical equipment provision could include drilling machine(s), a 150mm lathe, a double-ended grinding and buffing machine, pipe bending equipment, powered hack-saw, portable oxy-acetylene and/or electric and welding equipment.

23. The layout of the shop should allow for the manoeuvring of lengths of pipes up to 9m long.

24. If required, a small enclosure of say 3.5m^2 formed with glazed partitions may be provided for use by the charge-hand fitter.

(ii) *Electricians*

25. This area will be required primarily for repairing and servicing small and mainly portable electrical appliances (such as floor cleaning machines, food trolleys, electric irons, kettles and lighting fittings as well as various items of medical and surgical equipment).

26. The workshop should be equipped with work benches, vices, lockable drawers and a high-speed drilling machine. If necessary, the workshop may be divided into two sections for (i) electric power and (ii) instrument/electronic equipment. All benches will require low voltage power supply points for test purposes, portable tools, etc. (see Section V: Engineering Services) and an extra-low voltage supply. Provision should also be made for a 30 amp three-phase 415 volt four wire AC supply.

27. Where batteries are to be charged an enclosure is needed. It should be provided with a lead-lined bench, Belfast sink, cold water tap and natural ventilation. In a confined space however a mechanical flameproof extract fan will be necessary to prevent accumulation of gases and an air inlet grille will be required. Storage space for protective clothing etc. should be provided and first aid equipment should be readily available.

28. If required a small enclosure of about 3.5m^2 for occasional use by the charge-hand electrician may be provided.

(iii) *Carpenters/joiners*

29. This work area should be equipped with the usual carpenters' benches, preferably island type arranged transversely containing racks or cupboards. There should be a non-combustible waste storage bin for shavings etc.

30. A small enclosure for the charge-hand carpenter may be provided if required.

31. The types of power-operated items of equipment which might be required are planing machine, chisel mortise machine, circular saw, small band-saw and drilling machine.

32. The workshop should be provided with a Belfast sink, with taps for hot and cold water.

(iv) *Painters*

33. This area is a particularly high fire risk area and should therefore form a separate compartment for fire protection as is indicated in Section III of Hospital Design Note No. 2: Protection against Fire. The area should have equipment such as tables, benches, shelves, racks and cupboards. As far as is possible, this equipment should be non-combustible. A Belfast sink, with taps for hot and cold water, is needed.

34. Although much painting and decorating will be carried out away from the paint shop items of hospital equipment will be painted here. Adequate space is needed for manoeuvring large articles. Space for mechanical paint spraying plant may be required and this will need mechanical ventilation (see Section V: Engineering Services). In addition to the normal tools provision may be needed for items such as trestles and stripping equipment.

(v) *Building foreman's enclosure*

35. A small enclsoure of about 3.5m^2 is needed in the work area sited close to the building compound.

(b) Internal stores

(i) *Stores area*

36. One store equipped with simple steel and timber racking and arranged in regular bays is required for all trades. Pigeon-hole racks for small articles are needed. Part of the store should have a minimum length of 9m to enable long lengths of pipe, conduit, or other articles to be accommodated. Lockable cupboards for test meters and other instruments are needed. Service hatches between the stores and workshop may be provided if considered essential.

(ii) *Storekeeper*

37. A small enclosure is needed in the stores, for the use of the storekeeper, to record the movements of all materials and fittings in the store.

(c) Electrical switchroom

38. This area will be required for the sub-main switchboard, incorporating incoming mains isolator and metering (if required), busbar chamber, distribution switch fuse gear and fuse boards, and provision for future additions. It should be centrally sited, and well ventilated; the door should be lockable. The recommended size of the switchroom is 2.5m to 4.9m long by 1.5m wide, with a minimum height of 2.5m.

(d) Staff lavatories and cloakroom

39. Sanitary accommodation and individual lockers for men's clothes and personal belongings will be required. A shower together with the necessary drying facilities should be provided for use by workmen on very dirty work. The lavatory and cloakroom provision should be based on the number of employees in the works department. The figures quoted in the following table comply with the requirements of the Factories Act.

No. of male employees	*WC's*	*Urinals*	*Lavatory basins*
1 – 15	1		
16 – 35	2		
36 – 65	3		
66 – 100	4		
0 – 6		1	
7 – 20		2	
21 – 45		3	
46 – 70		4	
71 – 100		5	
For every 15			1
If female clerical/ secretarial assistance is provided.	1		1

(e) Cleaners' room

40. A room equipped with a high and low sink unit with hot and cold water, a draining board, storage cupboard and shelving, and space for storing mechanical cleaning equipment will be required. Adequate ventilation is important in this area.

(f) External stores

(i) *Builders' compound*

41. Part of this area is required for materials, eg sand, ballast aggregate, blocks, paving slabs, drain pipes and fittings. A covered area is needed for equipment such as ladders, scaffolding (minimum length 9m) racking for materials, and loose equipment, eg wheel-barrows and trestles.

(ii) *Garden equipment store*

42. Within the compound a lockable store is needed for garden equipment.

(g) Garage accommodation (for works department vehicles)

43. This should follow normal garage layout of 17m^2 per vehicle. Alternatively there may be advantages in using garages outside the hospital, under contract. The installation of petrol pumps and diesel oil pumps on a site adjacent to the works department for the use of works department vehicles (and possibly hospital or group vehicles) is not usually justified and a "voucher system" with outside garages is advocated.

B. Supplementary accommodation

(a) Where the group works department is on same site as the hospital

Lock-up store

44. A small lock-up store with racks is needed for hospital craftsmen to leave tools, small spare parts, test and other instruments when required for short periods (ie in lieu of continual daily booking in and out of group stores).

(b) Where the group works department is not on same site as the hospital

Combined lock-up store/workshop

45. A lock-up store with a bench and vice which might also serve as a minor workshop is required where craftsmen from group headquarters can leave their tools, spare parts, and test instruments when carrying out minor repairs over short periods at peripheral hospitals.

C. Additional accommodation

(a) Store for flammable items

(See Hospital Technical Memorandum No. 16 (Revised)—Fire Precautions. The model Code of licensing conditions for premises licensed for the keeping of petroleum spirit under the Petroleum (Consolidated) Act, 1968, and the Highly Flammable Liquids and Liquified Petroleum Gases Regulations, 1972, should be observed to the fullest extent possible. Requirements of other hospital departments for flammable stores should also be considered).

46. The storage of highly flammable liquids and materials constitutes a special fire risk. The aim in every instance should be to provide storage, where possible, in a separate building; if there is no alternative but to incorporate it in a main hospital building it should form a separate compartment of not less than one hour fire-resisting construction (including the roof or ceiling) and should have access only from the open air in accordance with Hospital Technical Memorandum No. 16: Fire Precautions (paragraphs 73 to 78 in the

May 1969 revised edition). The door to this store should be marked "Highly Flammable Store—No Smoking—No Approach with Naked Light". Wall and ceiling linings should be Class I or non-combustible materials. Fire fighting equipment arranged for automatic and manual operation is also necessary. An area of 9.5/14m² would be required.

(b) Paint spray booth

47. If it is considered essential to provide a paint spray booth it should preferably be a part of the paint shop, suitably screened off and sited adjacent to an outside wall. This will require heating and mechanical ventilation to comply with the Factories Act, 1961. (See Section V: Engineering Services). Special attention should be paid to Section IIIA of Hospital Design Note No. 2: Protection against Fire. An area of 11.5/16.5m² would be required.

(c) Store for articles awaiting repair or disposal

48. This room should be equipped with racks and shelving on one side, with a clear floor space for storing the more bulky articles. It may be convenient to site this with the main internal stores. An area of 18.5/27.5m² would be required.

(d) Corrosive solutions store

49. This room may be required for items such as carboys of sulphuric acid. A cold water supply to a hose point together with a drain should be provided. The store should have good natural ventilation and might be planned to adjoin the main stores for flammable items. An area of 9.5/14m² would be needed.

(e) Battery charging stations and accommodation

50. The increasing use of electric battery driven trolleys, or trucks, in hospitals means that trickle-charging stations for the trolley batteries will be necessary. If required an enclosure approximately 4.5m² (3m long x 1.5m wide) per trolley should be provided. Distilled water will normally be stored in the corrosive solutions store. Mechanical extract ventilation may be necessary to prevent the accumulation of gases (see also paragraphs 25 to 28 under "Electricians"). Air inlet grilles will be required.

(f) Garages

51. Consideration should be given to the need to provide garages for other hospital or group vehicles in the same area as the works department vehicles.

(g) Covered space for bicycles

52. A simple paved area may be required for bicycles in stands or covered racks.

(h) Messroom

53. This should be provided where the catering facilities do not include a sandwich or similar room: otherwise it may be provided only when justified by special circumstances. It should have adequate natural lighting, ventilation and drinking water. The following areas may be required.

9.5m² up to 600 beds; 18.5m²—600 to 1,200 beds; 23m²—1,200 to 2,000 beds; 28m²—2,000 to 3,000 beds; 32.5m²—3,000 to 4,000 beds.

V. Engineering services

54. The engineering services should be designed to allow easy access for repair and maintenance.

55. Facilities should be provided for the easy installation of meters should they at any time be required. Fire precautions may influence the design of engineering services, especially ventilation schemes. Full regard should be given to this matter at an early stage of planning.

Mechanical services

Heating and ventilation

56. The works department is usually served from the hospital's central heating system. Apart from precautions against the freezing of services in very cold weather heating will not normally be required at night or during week-ends.

57. Low-pressure steam or low-pressure hot water unit heaters or convectors may be used conveniently in the workshops and stores but due care should be taken to ensure correct mounting heights.

58. The following recommended heating design temperatures and ventilation rates during occupation based on an outside temperature of —1 °C are generally satisfactory:

Accommodation	*Temperature* °C	*Air changes per hour*
Workshops	15	2
Lavatories	15	2
Garages	7	3
Equipment stores	10	½

59. Apart from any special areas the department will normally be naturally ventilated. Mechanical ventilation will be limited to internal rooms, the paint spray booth and other areas specified in detail. Internal lavatories should have mechanical extract ventilation to give ten air changes per hour. In addition to the battery charging room, some extract mechanical ventilation only may be necessary at local points in workshops—for example where a forge is installed, or oxy-acetylene and/or electric arc welding plant is in use for long periods. Air inlets are necessary where the ventilation

is mechanical extract only. External discharges should be protected against back pressure from the wind.

Paint spray booth

60. Because of air-change rates associated with spray painting processes the recommended face velocity of the air across the booth opening should be not less than 0.38 metres per second. Input air drawn from outside the building should be warmed to avoid cold draughts. Generally, background heating should be provided by conventional heating arrangements, to 13 °C with incoming air heated to provide an overall temperature of 18 °C in the area. The extract fan should be provided with baffles to avoid paint-spray deposits on the fan and discharge to outside. The baffles should be hinged to facilitate cleaning. If cellulose solutions are used it will be necessary to comply with the Cellulose Solutions Regulations, 1934.

Hot, cold and drinking water services

61. These are usually provided from the main services of the hospital. Where the hot water service requires long pipe runs it may be more economic and convenient to have independent gas or electric water heaters. Spray taps are more economical in water consumption and may be used as an alternative to the normal pillar taps for wash-basins.

62. Where hot water storage is provided it should be based on meeting the requirements for one hour and the calorifier rating should be based on a three-hour recovery period.

63. Hot and cold water services will be required for lavatory basins and sinks; a cold water service for wc's and a hosepoint in the corrosive solutions store will be required.

64. A drinking water tap connected directly to the supply undertaking's service pipe should be placed near the wash-basins and also in the messroom.

Gas (fuel) supply

65. The provision of a gas service for carpenters' and fitters' shops will depend on local conditions of availability, installation and cost. If a gas meter is required it should preferably be housed in a convenient cupboard. If a convenient supply of town/natural gas is not available liquid petroleum gas (LPG) may be used but every care should be taken to ensure that the correct type of burner is used. The Home Office Code of Practice on the keeping of small LPG containers should be followed.

Installation of machinery

66. The local District Inspector of Factories should be consulted about the arrangements and guarding of power-operated machines to ensure the safety of staff using the workshops.

Electrical installation (See Hospital Technical Memorandum No. 7)

General

67. The electrical installation will include wiring and equipment for power supplies, general and special bench lighting, socket outlets, heating, ventilation, telephones, clocks and fire alarms.

68. A three-phase supply will normally be required and taken from the main intake or local sub-main distribution centre, as convenient. It should terminate in a switch room or sub-distribution centre. Adequate space and capacity should be allowed to provide for additional units.

69. Distribution fuse boards should be centrally placed to minimise the length of surface wiring. The boards should be easily reached from a standing position clear of machinery and racks. HRC fuses are recommended.

70. Mineral insulated metal sheathed cables, or PVC insulated cables enclosed in conduits or in metal trunking are suitable for workshop installation. Surface work is satisfactory.

71. Power distribution schemes should be designed to permit a reasonable degree of flexibility in the positioning of power-driven machines in the workshops.

72. The installation should be earthed in accordance with the current edition of the Regulations for the Electrical Equipment of Buildings issued by the Institute of Electrical Engineers. Unless a combined isolator/starter is provided close to each machine a separate isolator will be required, with suitable identification.

73. A 30 amp three-phase 415 volt four wire AC supply, terminating in a switch-fuse, will be required in the electricians' workshops for motor testing.

Artificial lighting

74. Lighting should follow standard modern practice. Fluorescent lighting may be preferred where higher lighting intensities are required for long periods. The stroboscopic effects of fluorescent lighting must be avoided where there is moving machinery.

75. Recommended values of illumination 1m above floor level are as follows:

Accommodation	*Average illumination level*
	Lux
Workshops	200
Stores, Garages, Lavatories, Cleaners' room	80

76. A uniform arrangement of lighting is desirable. All working areas must be illuminated to suit the lay-out of the machines and for work carried out to the standard recommended for the best industrial installation; these areas should be free from glare. Where appropriate, lighting fittings should be of an industrial pattern with smooth external surfaces to facilitate maintenance and cleaning.

77. Generally, switches should be of an industrial pattern, but in the garage and corrosive solutions store they should be of a "weather-proof" type positioned at least 1.2m above floor level.

78. Special lighting for machines and benches where necessary should preferably be extra-low voltage (eg 25 volts) industrial pattern, with adjustable arms. The use of units with built-in transformers will eliminate serious voltage drop on low-voltage circuits.

79. Inspection lamps for maintenance purposes may be used from the extra-low voltage system if provided.

Socket outlets

80. Sufficient 13 amp industrial type, universal, switched socket outlets connected to ring circuits should be provided to allow each portable appliance which is likely to be used at the same time to be supplied from a separate outlet.

81. Indicating lights should be fitted to socket outlets where they are likely to be used for testing electrical heating apparatus in which the heating elements are not visible.

82. The provision of general purpose socket outlets approximately 9m apart should allow for the convenient use of cleaning machines having flexible leads assumed to be 9m long. The use of three-phase socket outlets is not recommended. Fixed equipment rated up to 13 amps should be permanently connected to 13 amp fused spur-boxes. Equipment rated in excess of 13 amps should be permanently connected to separate final sub-circuits and be independently switched.

83. Socket outlets in the garage should be of a weather-proof type. The following socket outlet distribution is suggested.

Workshops	13 amp outlets to suit the number of appliances, plus 25 per cent allowance for future requirements.
Internal store	Two 13 amp outlets for general use.
Electrical switchroom	One 13 amp outlet for general use.

Telephones

84. Telephones for internal and external calls will form part of the hospital telephone system.

85. Extensions from the hospital system should be provided for the storekeepers, charge-hand electricians/fitters and building foreman's enclosures. A neon-type indicating call light in parallel with the telephone and placed in a strategic position may be useful when machines are running.

Electrical clocks

86. Synchronous electric clocks suitably placed will be required to serve the storekeeper's, fitters', electricians', and carpenters' workshops. If an impulse clock system exists and is convenient it may be extended to the works department. An electric recording "time-clock" for building and engineering staff may also be required. The provision of an alarm bell and push in the larger workshops to be used at the beginning and end of shifts, etc., may have advantages.

Fire alarms and fire-fighting equipment

87. Attention should be paid to the contents of Hospital Technical Memorandum No. 16 (Revised): Fire Precautions. Fire-fighting equipment for automatic operation may be required in the store for flammable items. Advice on the fire-fighting installation proposed should be sought from the Chief Fire Officer for the area.

VI. Cost and other relevant information

Cost control

88. For cost control purposes the lump sum Cost Guide figures for the various functional units shown in the Departmental Cost and Area Guide (Hospital Building Procedure Note No. 6: part of CAPRICODE), will be applicable. These figures include basic accommodation together with circulation and an allowance in respect of additional accommodation and/or additional engineering.

89. Building Notes recommend the standards of accommodation and services for hospital departments which the Department of Health and Social Security consider it reasonable to provide. Hospital Boards are at liberty to depart from the design recommendations given in Building Notes provided they are satisfied that the standards of accommodation and services they adopt are adequate. The Departmental Cost Allowance however is to be regarded as the maximum sum available for the department and should not be exceeded. Hospital Boards are encouraged to produce designs for the provision of appropriate accommodation and services at a cost less than the Departmental Cost Allowance.

90. The works department Cost Guide figures provide for the basic supplementary and additional accommodation detailed in paragraphs 17, 18 and 19 above and for the engineering services detailed in paragraph 93 below.

Apportionment of costs

91. An assessment of the notional cost apportionment between the building and engineering service elements should be made at Procedural Stage C1 (Provisional Cost Plan—Hospital Building Procedure Note No. 1: part of CAPRICODE).

Circulation space

92. For the purpose of preliminary planning the area occupied by internal circulation space and internal walls and partitions represents, on average, an addition of 10% of the net floor area of basic and additional accommodation.

Engineering services

93. The following engineering services are included in the quoted cost of basic accommodation shown in the Departmental Cost and Area Guide:

(a) *Mechanical services:*

Heating:	Low-pressure hot water system with unit heaters from central supply.
Ventilation:	Plenum supply and extract; extract fans.
Hot and cold water services:	From central supply, not including calorifier or storage tanks.
Compressed air:	From central supply (if required).
Fire protection:	Supply from fire main to hose reels, automatic fire fighting and detection installation.
Gas (fuel) supply:	From central supply.

(b) *Electrical services:*

Lighting including fittings, socket outlets, (low-voltage and extra-low voltage) wiring for Group 1 and 2A equipment, wiring for mechanical services, distribution switch gear sub-mains and distribution fuse boards. Telephones, fire alarms and clocks.

(c) *Equipment:*

Pillar drills, double-ended grinder, lathe, pipe bender, power-saw, circular saw, band-saw, planing machine.

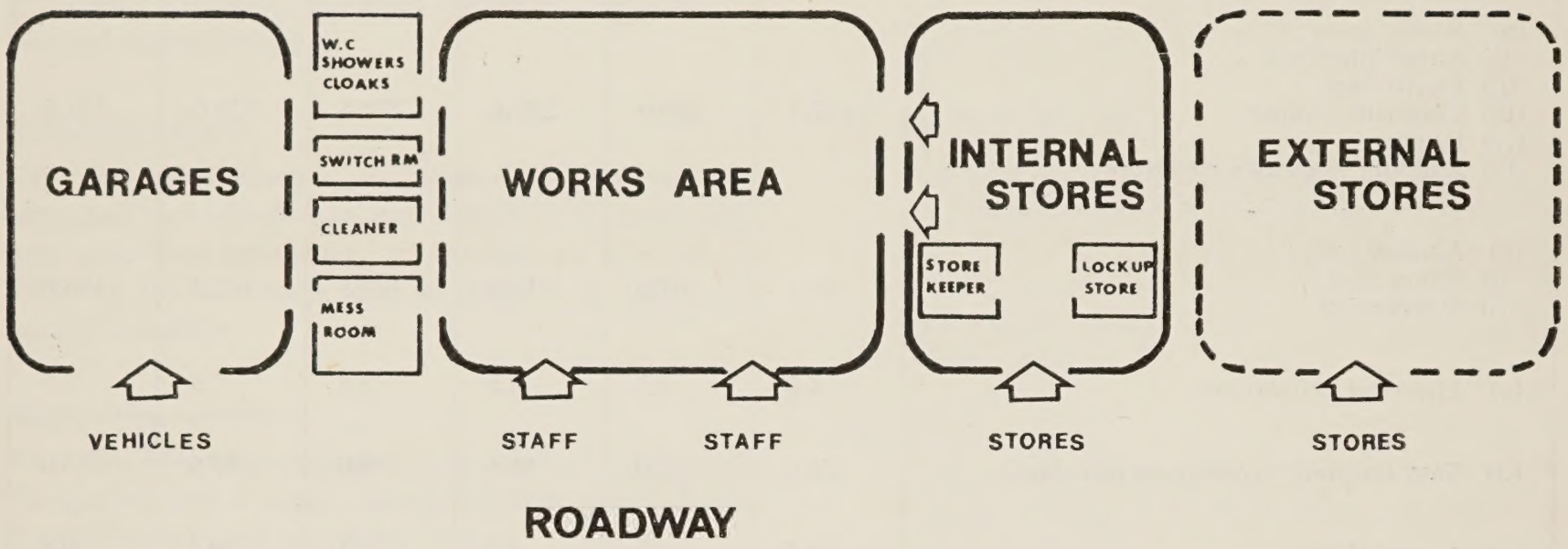
Additional accommodation equipment:

Cooker, battery charging plant.

Schedule of Accommodation

	300-600 beds m²	601-800 beds m²	801-1200 beds m²	1201-2000 beds m²	2001-3000 beds m²	3001-4000 beds m²
Basic accommodation						
(a) *Works areas etc* (i) Fitters/plumbers (ii) Electricians (iii) Carpenters/joiners (iv) Painters (v) Building foreman's enclosure	162.5	209.0	256.0	278.5	325.0	371.5
(b) *Internal stores* (i) Stores area (ii) Storekeeper	69.5	93.0	116.0	139.5	162.5	186.0
(c) *Electrical switchroom*	4.0	4.5	4.5	5.5	7.5	7.5
(d) *Staff lavatories, cloakroom and shower*	28.0	43.0	56.5	76.0	99.5	116.0
(e) *Cleaners' room*	4.5	4.5	4.5	9.5	9.5	9.5
Circulation on (a) to (e) Planning provision — 10%	27.0	35.5	44.0	51.0	60.5	69.0
(f) *External stores* (i) Builders' compound (ii) Garden equipment store	88.0	116.0	139.5	139.5	139.5	139.5
(g) *Garage accommodation*	67.0	83.5	117.0	167.0	200.5	234.0
Supplementary accommodation						
(a) *Where Group works department is on same site as hospital*—lock-up store	9.5	14.0	18.5	23.5	28.0	32.5
(b) *Where Group works department is not on same site as hospital*—combined lock-up store/workshop	18.5	28.0	37.0	46.5	51.0	55.5

Diagrammatic layout 600 - 800 beds



Department of Health and Social Security
Welsh Office

Prices in brackets include postage
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Hospital Building Notes, Design Notes, Equipment Notes, Building Bulletins and Technical Memoranda

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